



Wildlife Services Seeking Solutions Through Research

United States
Department of
Agriculture

Animal and
Plant Health
Inspection
Service

**National Wildlife
Research Center**



Developing New Tools to Manage Rodents and Other Introduced Vertebrate Pests in Hawaii

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National Wildlife Research Center Scientists Assess Environmentally Sound Methods to Reduce Crop and Natural Resource Damage

Wildlife Services' (WS) National Wildlife Research Center (NWRC) is the only Federal research facility devoted exclusively to resolving conflicts between people and wildlife through the development of effective, selective, and acceptable methods, tools, and techniques. NWRC's Hilo, HI, field station is ideally located to allow research biologists to develop methods needed to control rodent damage to Hawaii's agricultural crops and native ecosystems.

Rodents cause significant damage to Hawaii's agricultural and natural resources, and pose a threat to public health and safety. Current management techniques provide inconsistent levels of protection from rodent damage. More effective methods of management are needed to resolve small mammal damage to agriculture, reforestation, native ecosystems, and property. This is why NWRC



Groups Affected By These Problems:

- Macadamia nut producers
- Farmers
- Horticulture industry
- Wildlife managers
- Natural resource managers

Major Research Accomplishments:

- WS provided the data needed for the Hawaii Department of Agriculture to obtain emergency-use registration of caffeine as a toxicant to control invading tree frogs.
- WS demonstrated that diphacinone baiting, used to manage invading rat populations and protect native ecosystems, has a negligible impact on non-target species.

biologists conduct field and laboratory research to evaluate and improve methods to reduce and monitor rodent impacts on Hawaiian crops and natural resources. Collaboration with other State and Federal agencies and private organizations is needed, however, to develop techniques to reduce damage and manage rodents and other vertebrate species in natural areas.

Due to rapid diversification in Hawaiian agriculture, there is also a need to assess the economic impacts of damage to these new crops caused by rodents and other recently introduced vertebrate pest populations.

"Solutions to Problems Depend Upon Knowledge Which Only Research Can Provide"

Applying Science and Expertise to Wildlife Challenges

Cost Effective Integrated Damage Management—NWRC scientists are assessing the effects of various techniques for protecting Hawaiian crops and natural resources. In addition, NWRC researchers are developing information and guidelines for producers to effectively minimize the quantities of pesticides used to manage rodent damage.

Alternative Baits—NWRC scientists are also identifying and evaluating alternative rodenticide baits in an effort to manage rodent damage in a more ecologically sound manner. As part of their

research, NWRC scientists are compiling the necessary data to federally register these baits. Field tests are being conducted on roof rats, a species that decimates macadamia nut orchards in various geographic regions of Hawaii.

Introduced Invasive Species—The negative impacts of introduced species on island ecosystems are severe. In Hawaii, a species of greenhouse frogs was recently introduced from the Caribbean. In addition to its propensity for reproducing quickly and its piercingly loud night time call, the species eats the same insects and snails that native forest birds rely on for survival. NWRC scientists are studying ways to manage the outbreak of this invasive species in Hawaii.

Selected Publications:

- Dunlevy, P.A., E.W. Campbell III, and G.D. Lindsey. 2000. Broadcast application of a placebo rodenticide bait in a native Hawaiian forest. *International Biodeterioration and Biodegradation* 45:199-208.